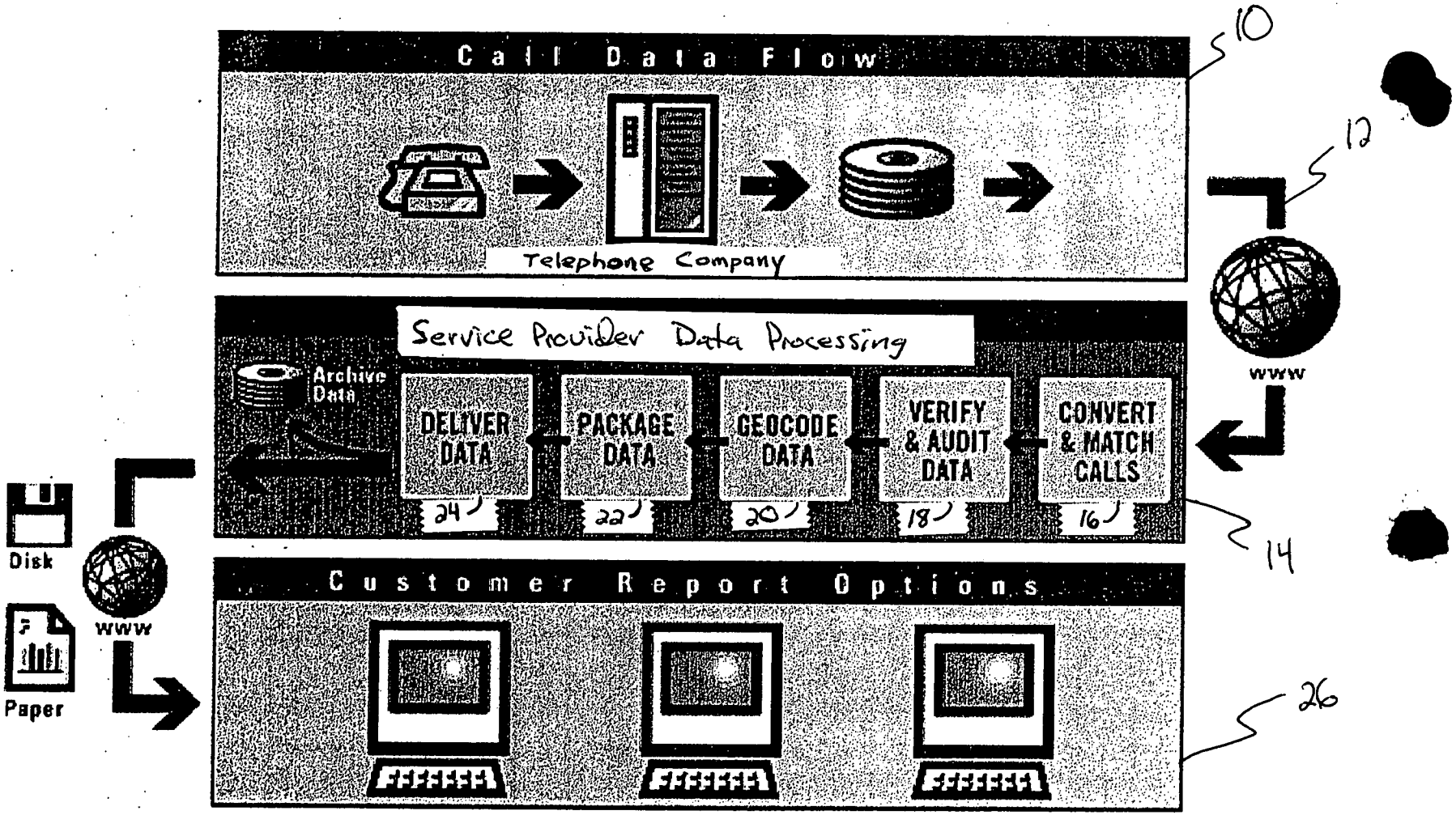

Call Data Flow
10
12
Telephone Company
Service Provider Data Processing
Archive Data
DELIVER DATA
PACKAGE DATA
GEOCODE DATA
VERIFY & AUDIT DATA
CONVERT & MATCH CALLS
24
22
20
18
16
14
www
Disk
www
Paper
Customer Report Options
26

Figure 1

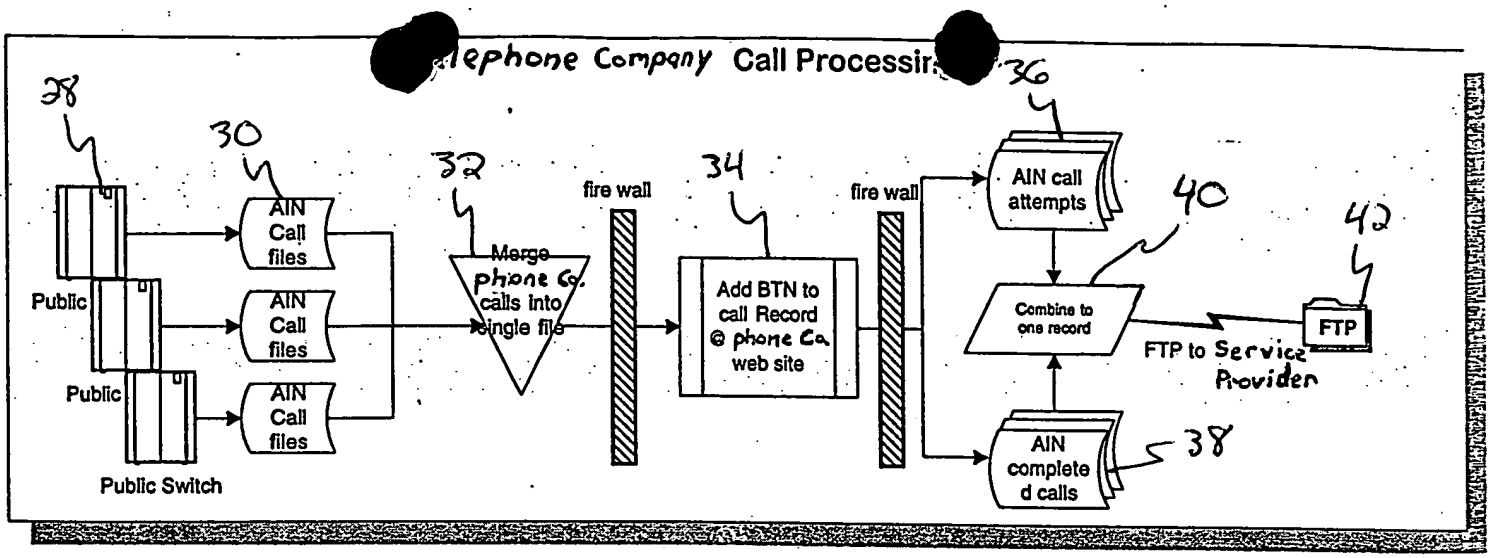

Telephone Company Call Processing
28
30
32
34
36
38
40
42
Public
Public
Public Switch
AIN Call files
AIN Call files
AIN Call files
Merge phone Co. calls into single file
fire wall
Add BTN to call Record @ phone Co web site
fire wall
AIN call attempts
Combine to one record
FTP
FTP to Service Provider
AIN complete d calls

Fig. 2

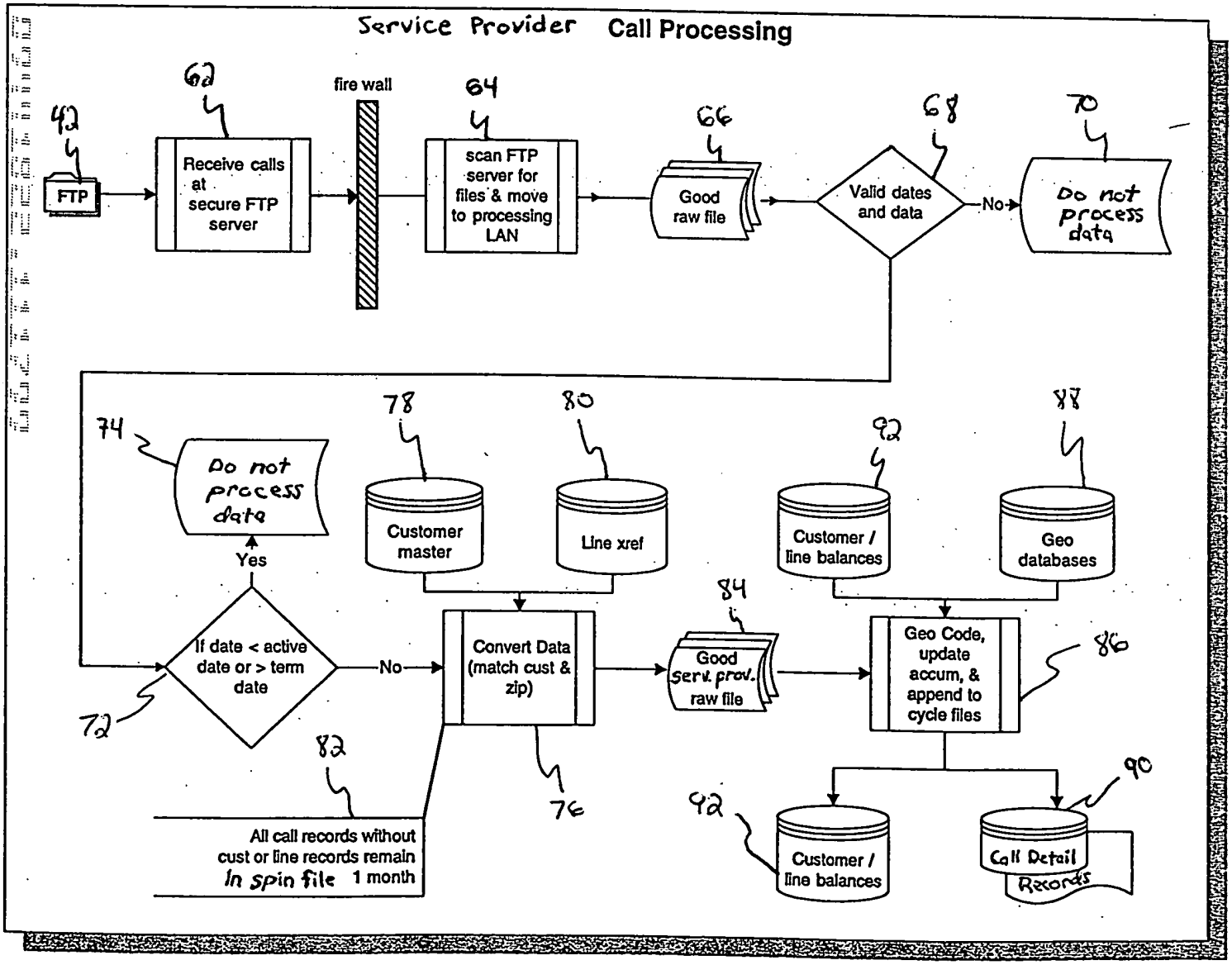

Service Provider Call Processing
42
FTP
62
Receive calls at secure FTP server
fire wall
64
scan FTP server for files & move to processing LAN
66
Good raw file
68
Valid dates and data
No
70
Do not process data
74
Do not process data
Yes
78
Customer master
80
Line xref
92
Customer / line balances
88
Geo databases
If date < active date or > term date
72
No
Convert Data (match cust & zip)
76
84
Good serv. prov. raw file
Geo Code, update accum, & append to cycle files
86
82
All call records without cust or line records remain In spin file 1 month
92
Customer / line balances
90
Call Detail Records

Fig. 4

RBOC-ID	Vencode	Cmr_rate	study type	vendor type	btn	line	time	date	calling party	name	zip	calltype	response type	duration	sec	err code	busycd	exception	busycause
85006cf5c016	11	cmr_sample_c	0	0	105072881861	105072527500	6050700	819981007	105078679181	nr	9559233503	CONTINUE	1	1	40	0	0	0	

44 46 48 50 52 54 56 58 60

Fig. 3

Cycle Processing

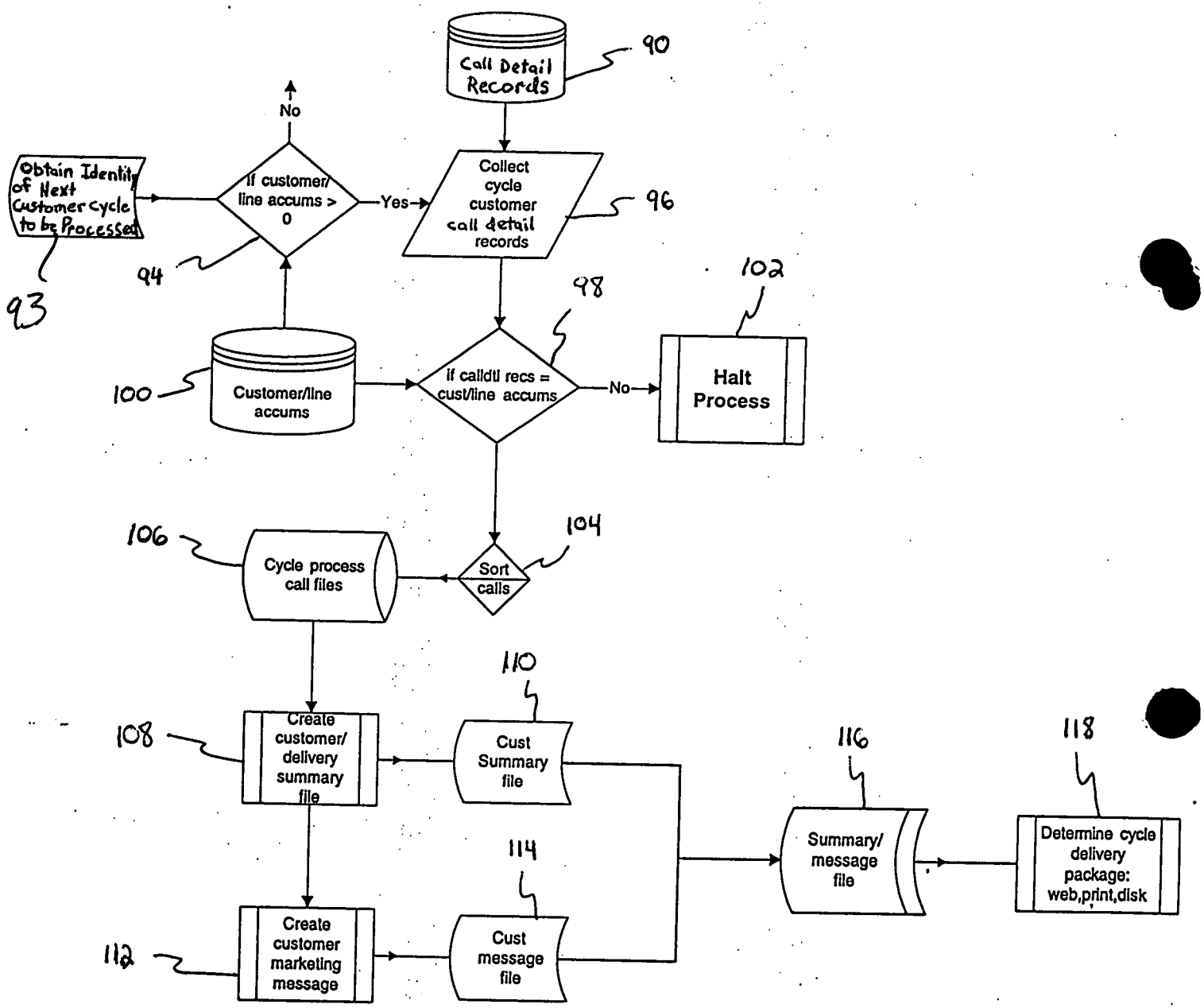


Fig. 5

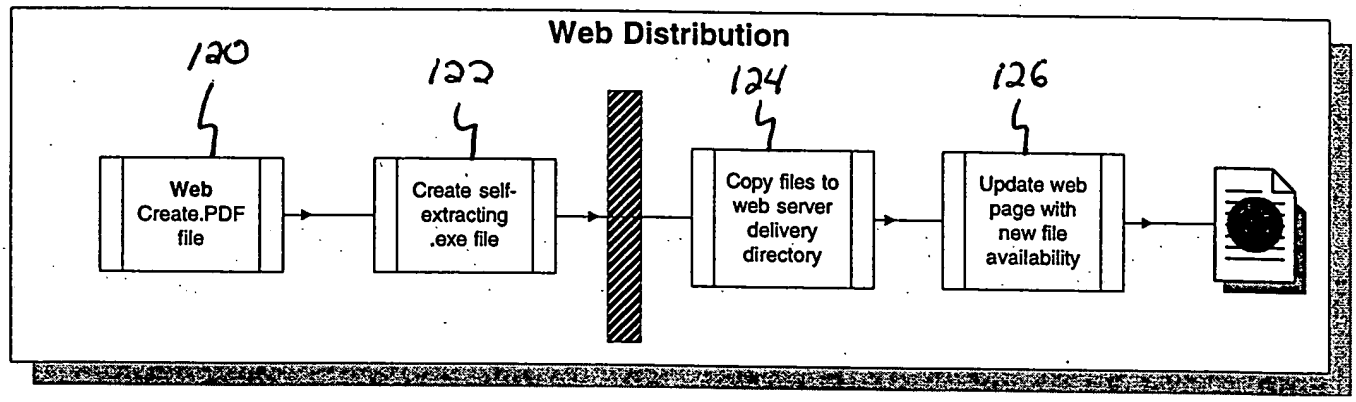

Web Distribution
120
122
124
126
Web Create.PDF file
Create self-extracting .exe file
Copy files to web server delivery directory
Update web page with new file availability

Fig. 6

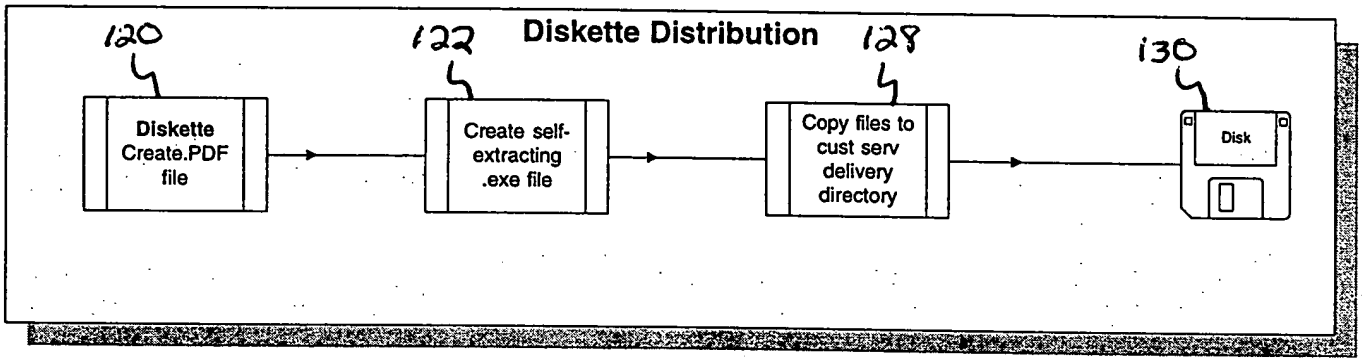

Diskette Distribution
120
122
128
130
Diskette Create.PDF file
Create self-extracting .exe file
Copy files to cust serv delivery directory
Disk

Fig. 7

132 134 136 138 140 142 144 146 148 150 152 154 156

FILE_ID	CDATE	CTIME	DN	CPN	CALL_TYPE	CALL_DISP	CALL_STAT	CALL_DUR	XACTION	CPN_NAME	POSTALCODE	LONGITUDE	LATITUDE	Q_BYTES	MISC
	8/22/98	04:18:15 PM	5135551212	9375787400	I	2	0	0		unavailable		-84.193714	39.759868	S	
	8/22/98	04:18:36 PM	5135551212	8122562495	I	0	1	260		unavailable		-85.384117	38.733633	S	
	8/22/98	04:32:30 PM	5135551212	7405458420	I	0	1	200		unavailable		-82.961757	40.232652	S	
	8/22/98	06:39:51 PM	5135551212	1111111111	I	0	1	360		unavailable		0.000000	0.000000	U	
	8/23/98	08:55:34 AM	5135551212	5555555555	I	0	1	2730		unavailable		0.000000	0.000000	U	
	8/23/98	09:09:07 AM	5135551212	1111111111	O	0	1	240		unavailable		0.000000	0.000000	U	
	8/23/98	09:52:46 AM	5135551212	1111111111	I	1	0	0		unavailable		0.000000	0.000000	U	
	8/23/98	12:22:41 PM	5135551212	1111111111	I	0	1	230		unavailable		0.000000	0.000000	U	
	8/23/98	12:48:28 PM	5135551212	5133901888	I	0	1	110		unavailable		-84.519930	39.102459	S	
	8/23/98	01:41:09 PM	5135551212	6066207160	I	0	1	220		unavailable		-84.519930	39.102459	S	
	8/23/98	01:53:10 PM	5135551212	9378565488	I	0	1	100		unavailable		-84.364952	39.623529	S	
	8/23/98	02:17:51 PM	5135551212	1111111111	I	2	0	0		unavailable		0.000000	0.000000	U	
	8/23/98	03:32:58 PM	5135551212	1111111111	I	0	1	50		unavailable		0.000000	0.000000	U	
	8/23/98	03:47:34 PM	5135551212	5136598931	I	3	0	0		unavailable		-84.519930	39.102459	S	
	8/23/98	05:30:56 PM	5135551212	7658471638	I	0	1	220		unavailable		-84.941571	40.049073	S	
	8/23/98	07:16:25 PM	5135551212	9372740967	I	0	1	70		unavailable		-84.225906	39.790287	S	
	8/23/98	11:09:44 PM	5135551212	1111111111	I	0	1	2720		unavailable		0.000000	0.000000	U	
	8/21/98	09:06:43 AM	5135551212	6066354067	O	0	1	50		unavailable	410019720	-84.419803	38.880692	A	
	8/20/98	09:17:34 AM	5135551212	6065895650	I	0	1	4400		unavailable	410058211	-84.722085	39.028344	A	
	8/19/98	08:33:35 AM	5135551212	6068697769	I	2	0	0		unavailable	410059751	-84.737297	39.075182	A	
	8/19/98	09:05:04 AM	5135551212	6066879769	I	0	1	2180		unavailable	410059751	-84.737297	39.075182	A	
	8/19/98	05:22:59 PM	5135551212	6066896779	I	0	1	2850		unavailable	410059751	-84.737297	39.075182	A	
	8/21/98	08:55:45 PM	5135551212	6066722444	I	0	1	280		unavailable	410069608	-84.369442	38.787168	A	
	8/17/98	11:59:37 AM	5135551212	6069218116	O	0	1	760		unavailable	410111135	-84.530487	39.082738	A	
	8/20/98	02:43:02 PM	5135551212	6062198116	I	0	1	3450		unavailable	410111135	-84.530487	39.082738	A	
	8/21/98	04:59:46 PM	5135551212	6062198116	I	1	0	0		unavailable	410111135	-84.530487	39.082738	A	
	8/18/98	10:21:30 AM	5135551212	6062916544	I	0	1	1610		unavailable	410111160	-84.529001	39.082483	A	
	8/19/98	09:26:36 AM	5135551212	6069214564	I	0	1	710		unavailable	410111160	-84.529001	39.082483	A	

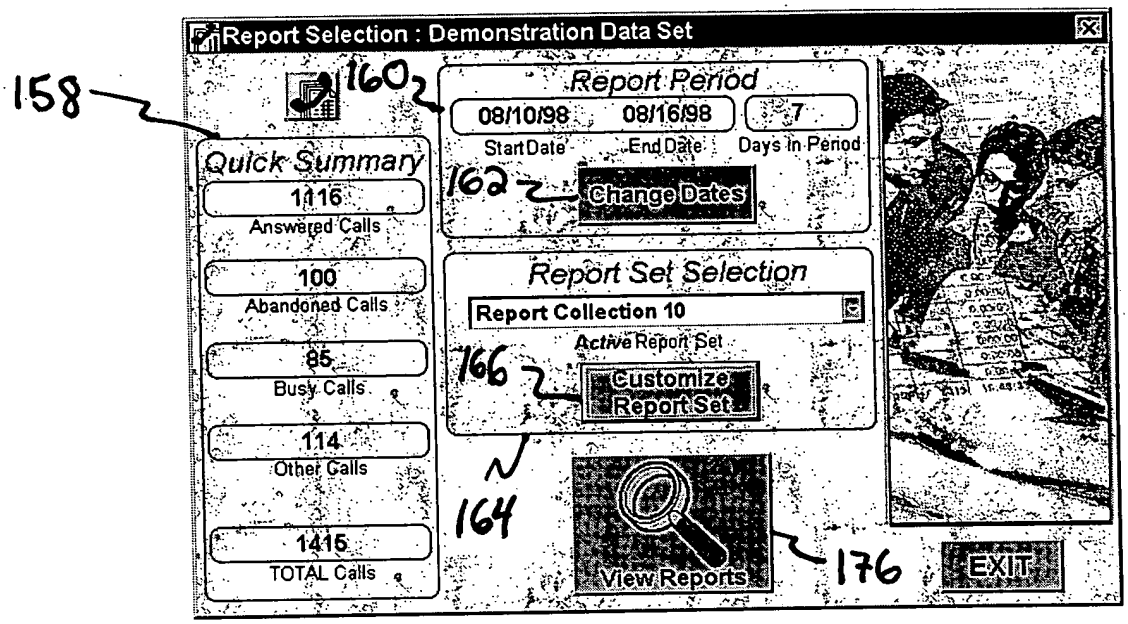
90

Fig. 8

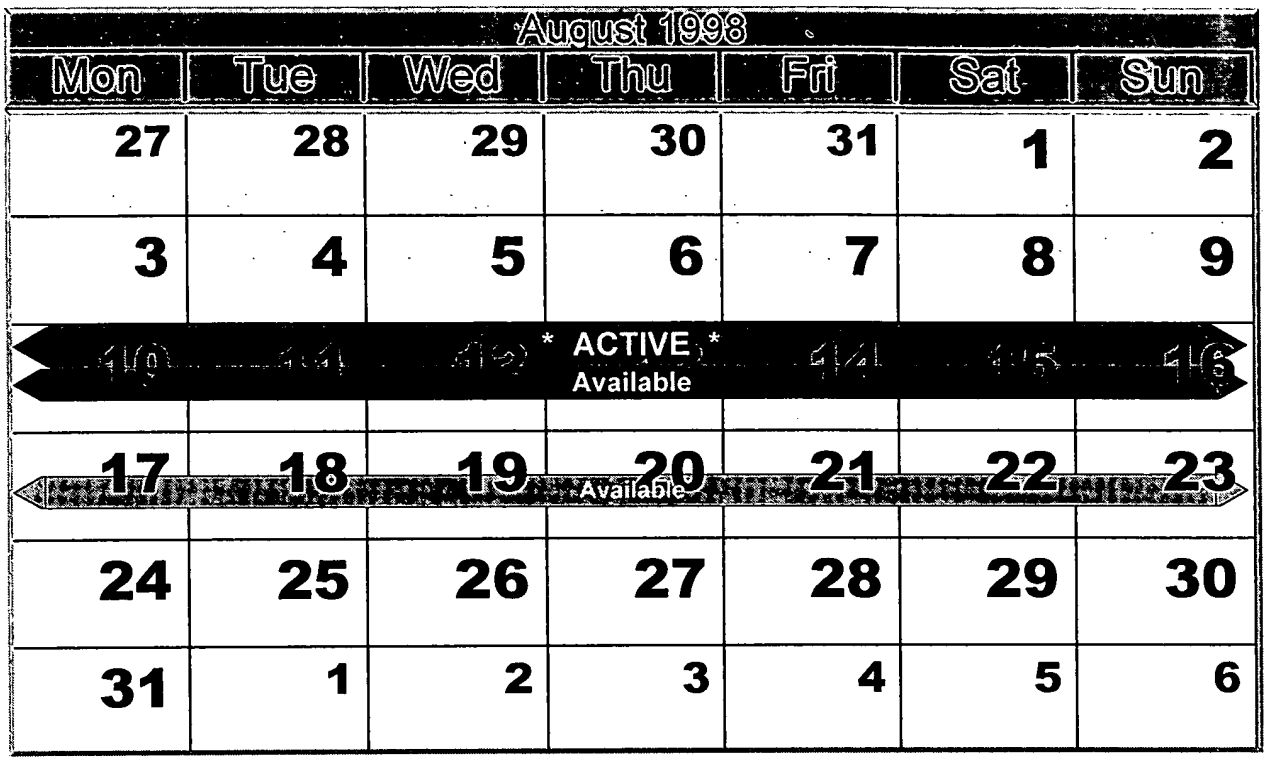
Geocoding logic hierarchy

	Criterion				Value
	CASE1				
IF	9 digit zip exists in zip field		& exists in ->	9 digit zip DB	A
	otherwise	9 digit zip (1st 5 digits)	exists in ->	5 digit zip DB	B
	otherwise	9 digit zip (1st 3 digits)	exists in ->	3 digit zip DB	C
	otherwise	npanxx of calling # field	exists in ->	npanxx DB	D
	otherwise	npa of calling # field	exists in ->	nap DB	E
	otherwise	use special value indicating unknown origin			F
	CASE2				
otherwise, IF	6, 7, or 8 digit zip exists in zip field (bad data)				
	AND	npanxx of calling # field	exists in ->	npanxx DB	G
	otherwise	npa of calling # field	exists in ->	nap DB	H
	otherwise	use special value indicating unknown origin			I
	CASE3				
otherwise, IF	5 digit zip exists in zip field		& exists in ->	5 digit zip DB	J
	otherwise	5 digit zip (1st 3 digits)	exists in ->	3 digit zip DB	K
	otherwise	npanxx of calling # field	exists in ->	npanxx DB	L
	otherwise	npa of calling # field	exists in ->	nap DB	M
	otherwise	use special value indicating unknown origin			N
	CASE4				
otherwise, IF	< 5 digit zip exists in zip field (bad data)				
	AND	npanxx of calling # field	exists in ->	npanxx DB	P
	otherwise	npa of calling # field	exists in ->	nap DB	Q
	otherwise	use special value indicating unknown origin			R
	CASE5				
otherwise, IF	0 or null exists in zip field (no zip)				
	AND	npanxx of calling # field	exists in ->	npanxx DB	S
	otherwise	npa of calling # field	exists in ->	nap DB	T
	otherwise	use special value indicating unknown origin			U

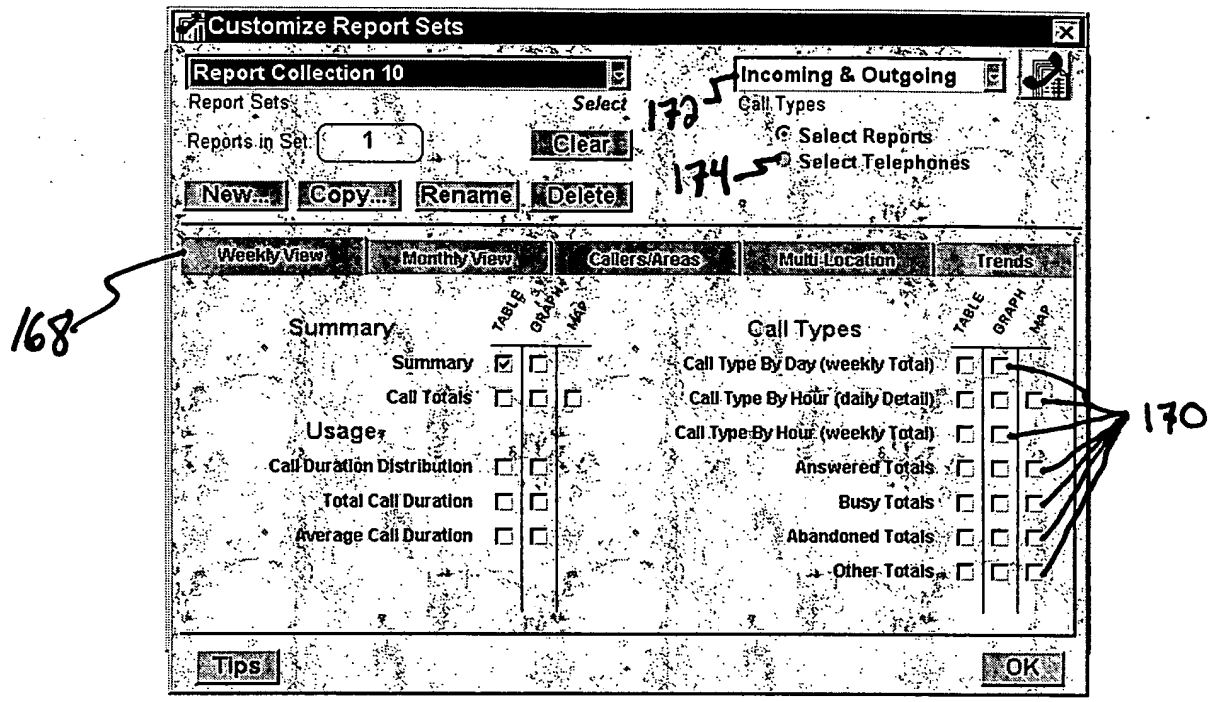
Table 1


Report Selection : Demonstration Data Set
158
160
Quick Summary
1116
Answered Calls
100
Abandoned Calls
85
Busy Calls
114
Other Calls
1415
TOTAL Calls
Report Period
08/10/98
08/16/98
7
Start Date
End Date
Days in Period
162
Change Dates
Report Set Selection
Report Collection 10
Active Report Set
166
Customize Report Set
164
View Reports
176
EXIT

Appendix A


August 1998
Mon
Tue
Wed
Thu
Fri
Sat
Sun
27
28
29
30
31
1
2
3
4
5
6
7
8
9
* ACTIVE *
Available
17
18
19
20
Available
21
22
23
24
25
26
27
28
29
30
31
1
2
3
4
5
6

Appendix B


Customize Report Sets
Report Collection 10
Report Sets
Select
Reports in Set 1
Clear
New...
Copy...
Rename
Delete
Incoming & Outgoing
Call Types
Select Reports
Select Telephones
172
174
168
Weekly View
Monthly View
Callers/Areas
Multi-Location
Trends
Summary
TABLE
GRAPH
MAP
Summary
Call Totals
Usage
Call Duration Distribution
Total Call Duration
Average Call Duration
Call Types
Call Type By Day (weekly Total)
Call Type By Hour (daily Detail)
Call Type By Hour (weekly Total)
Answered Totals
Busy Totals
Abandoned Totals
Other Totals
170
Tips
OK

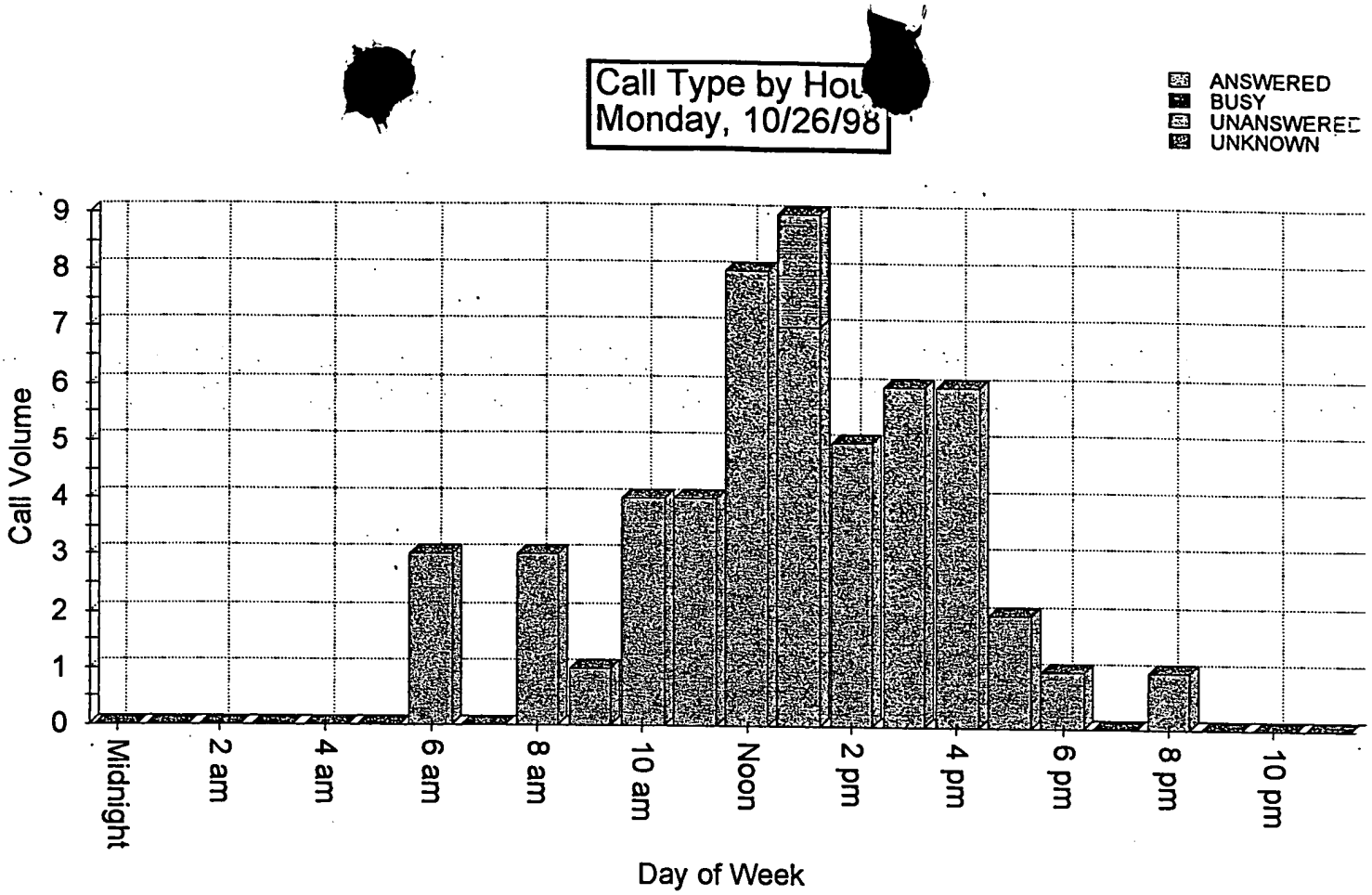
Appendix C

New ZIP Codes

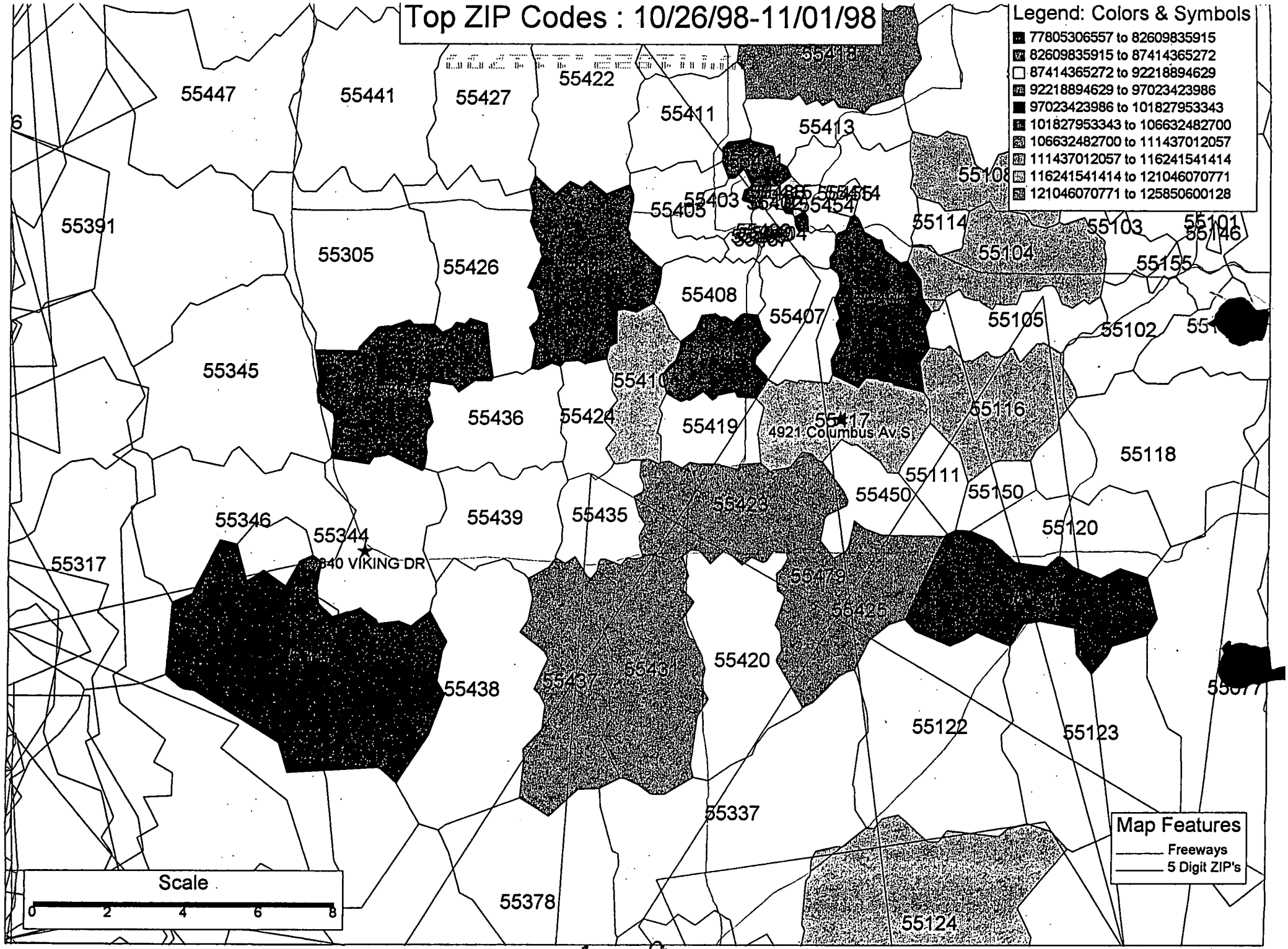
New ZIP codes discovered in the current date range ranked by answered call count.

Zip Code	State	Call Count	First Call Date & Time	Last Call Date & Time	Total Duration
55402	MN	11	10/26/98 11:07:00 AM	10/30/98 02:46:00 PM	0:27:40.0
55416	MN	11	10/26/98 12:11:00 PM	10/29/98 02:37:00 PM	0:11:25.0
84111	UT	6	10/26/98 09:56:00 AM	10/28/98 02:15:00 PM	0:31:12.0
55343	MN	6	10/26/98 01:38:00 PM	10/30/98 11:57:00 AM	0:14:28.0
56304	MN	5	10/26/98 06:43:00 PM	10/28/98 05:47:00 PM	0:44:51.0
85012	AZ	4	10/27/98 05:15:00 PM	10/29/98 05:48:00 PM	0:06:14.0
55347	MN	4	10/26/98 06:51:00 AM	10/28/98 02:43:00 PM	0:02:31.0
98191	WA	3	10/26/98 10:34:00 AM	10/29/98 06:09:00 PM	0:16:07.0
55104	MN	3	10/26/98 11:48:00 AM	10/27/98 11:30:00 AM	0:03:12.0
55415	MN	3	10/27/98 05:34:00 PM	10/30/98 01:03:00 PM	0:02:17.0
80132	CO	3	10/26/98 12:57:00 PM	10/26/98 02:57:00 PM	0:01:24.0
55425	MN	2	10/26/98 04:25:00 PM	10/28/98 03:56:00 PM	0:06:05.0
98188	WA	2	10/28/98 01:26:00 PM	10/28/98 01:29:00 PM	0:05:34.0
83204	ID	2	10/30/98 11:09:00 AM	10/30/98 11:09:00 AM	0:04:48.0
55431	MN	2	10/26/98 03:59:00 PM	10/30/98 09:44:00 AM	0:03:39.0
55124	MN	2	10/27/98 02:08:00 PM	10/27/98 02:10:00 PM	0:03:07.0
55364	MN	2	10/27/98 03:50:00 PM	10/27/98 03:50:00 PM	0:00:46.0
55437	MN	2	10/28/98 05:11:00 PM	10/29/98 03:25:00 PM	0:00:29.0
55305	MN	1	10/27/98 03:20:00 PM	10/27/98 03:20:00 PM	0:09:54.0
85283	AZ	1	10/28/98 05:44:00 PM	10/28/98 05:44:00 PM	0:07:33.0
85024	AZ	1	10/27/98 05:41:00 PM	10/27/98 05:41:00 PM	0:04:06.0
80202	CO	1	10/30/98 01:36:00 PM	10/30/98 01:36:00 PM	0:03:35.0
55118	MN	1	10/30/98 08:37:00 AM	10/30/98 08:37:00 AM	0:03:17.0
97401	OR	1	10/29/98 02:13:00 PM	10/29/98 02:13:00 PM	0:02:32.0
80206	CO	1	10/28/98 10:09:00 AM	10/28/98 10:09:00 AM	0:02:02.0
68144	NE	1	10/28/98 03:14:00 PM	10/28/98 03:14:00 PM	0:01:51.0
55391	MN	1	10/28/98 05:36:00 PM	10/28/98 05:36:00 PM	0:01:48.0
55011	MN	1	10/26/98 02:30:00 PM	10/26/98 02:30:00 PM	0:01:47.0
85255	AZ	1	10/27/98 05:55:00 PM	10/27/98 05:55:00 PM	0:01:22.0
99216	WA	1	10/30/98 11:29:00 AM	10/30/98 11:29:00 AM	0:01:11.0
97204	OR	1	10/26/98 02:08:00 PM	10/26/98 02:08:00 PM	0:00:57.0
55113	MN	1	10/26/98 03:59:00 PM	10/26/98 03:59:00 PM	0:00:43.0
68102	NE	1	10/26/98 12:05:00 PM	10/26/98 12:05:00 PM	0:00:41.0
98004	WA	1	10/30/98 03:32:00 PM	10/30/98 03:32:00 PM	0:00:41.0
55422	MN	1	10/26/98 11:12:00 AM	10/26/98 11:12:00 AM	0:00:20.0
55102	MN	1	10/27/98 11:47:00 AM	10/27/98 11:47:00 AM	0:00:07.0
55427	MN	1	10/26/98 04:09:00 PM	10/26/98 04:09:00 PM	0:00:06.0
55404	MN	1	10/26/98 04:26:00 PM	10/26/98 04:26:00 PM	0:00:05.0
55420	MN	1	10/26/98 10:05:00 AM	10/26/98 10:05:00 AM	0:00:03.0

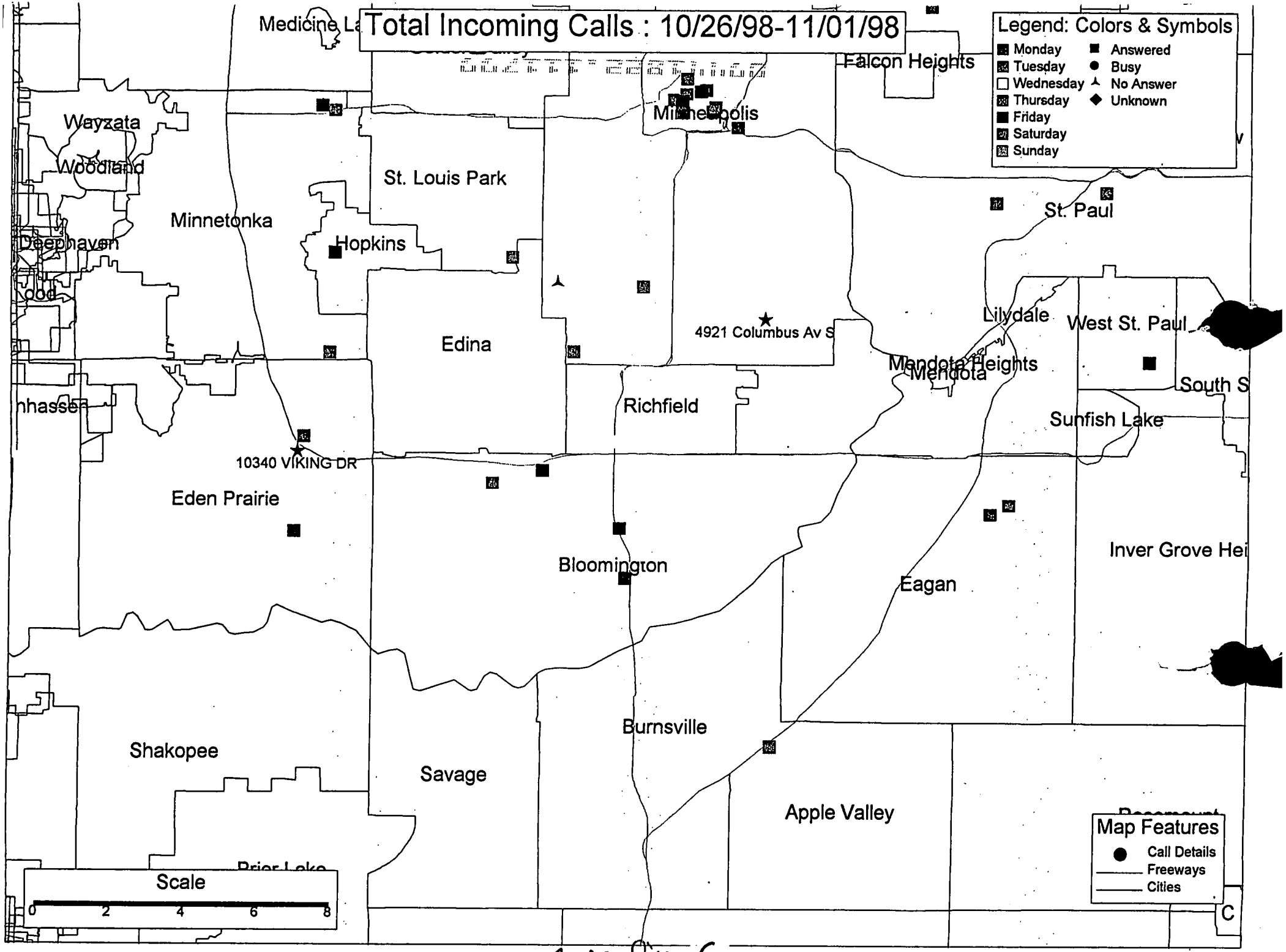
Appendix D


Call Type by Hou
Monday, 10/26/98
ANSWERED
BUSY
UNANSWERED
UNKNOWN
Call Volume
0
1
2
3
4
5
6
7
8
9
Midnight
2 am
4 am
6 am
8 am
10 am
Noon
2 pm
4 pm
6 pm
8 pm
10 pm
Day of Week

Appendix E


Top ZIP Codes : 10/26/98-11/01/98
Legend: Colors & Symbols
77805306557 to 82609835915
82609835915 to 87414365272
87414365272 to 92218894629
92218894629 to 97023423986
97023423986 to 101827953343
101827953343 to 106632482700
106632482700 to 111437012057
111437012057 to 116241541414
116241541414 to 121046070771
121046070771 to 125850600128
55447
55441
55427
55422
55411
55413
55391
55305
55426
55403
55405
55454
55114
55103
55101
55146
55104
55155
55408
55407
55105
55102
55345
55410
55436
55424
55419
55417
4921 Columbus Av S
55116
55118
55111
55450
55150
55423
55346
55344
840 VIKING DR
55439
55435
55120
55317
55479
55425
55420
55438
55437
55431
55122
55123
55337
55378
55124
Scale
0 2 4 6 8
Map Features
Freeways
5 Digit ZIP's

Appendix F


Total Incoming Calls : 10/26/98-11/01/98
Legend: Colors & Symbols
Monday
Tuesday
Wednesday
Thursday
Friday
Saturday
Sunday
Answered
Busy
No Answer
Unknown
Medicine La
Falcon Heights
Minneapolis
Wayzata
Woodland
St. Louis Park
Minnetonka
St. Paul
Deephaven
Hopkins
4921 Columbus Av S
Lilydale
West St. Paul
Edina
Mendota Heights
Mendota
South S
Richfield
Sunfish Lake
10340 VIKING DR
Eden Prairie
Bloomington
Inver Grove Hei
Eagan
Burnsville
Shakopee
Savage
Apple Valley
Prior Lake
Scale
0
2
4
6
8
Map Features
Call Details
Freeways
Cities

Appendix G